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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MARSH FISCHMANN & BREYFOGLE, LLP
3151 S. VAUGHN WAY
SUITE 411
AURORA, CO 80014

EXAMINER

NATNAEL, PAULOS M

ART UNIT PAPER NUMBER

2614

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/923,920

Applicant(s)

MCDONALD, DAVID C.

Examiner

Paulos M. Natnael

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-17 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 21 is/are rejected.
- 7) ☒ Claim(s) 18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims **1-6 and 21** are rejected under 35 U.S.C. 102(e) as being anticipated by Pettitt et al. U.S. Pat. No. 6,256,073.

Considering claim 1, Pettitt discloses all claimed subject matter, note;

a) a segmented color wheel having four segments..., is met by color wheel 400, fig.4;

b) the claimed three of the segments being primarily transmissive in only a portion of the wavelength spectrum of visible light, the portion for each of the three segments not being identical, is met by segments 402-408 which are not identical.

c) a fourth segment being broadly transmissive across the wavelength spectrum of visible light, the broadly-transmissive segment having a transmittance that is not uniform

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across the wavelength spectrum of visible light so as to provide a desired color of light transmitted therethrough, is met by the white segment;

d) a base to which the color wheel is rotatably mounted, is inherent because the color wheel 400 is rotating color wheel and has to be mounted somewhere

Considering claim 2, a color sequencing system as defined in claim 1, wherein the color sequencing system is optimized for use with a particular light source by selecting the transmittance of the broadly-transmissive segment so as to provide a substantially uniform light output after the light from the light source has passed through the broadly-transmissive segment.

See rejection of claim 1(c).

Considering claim 3, a color sequencing system as defined in claim 2, wherein the spectral transmittance of the broadly-transmissive segment is substantially the inverse of the spectral light output from the light source, is inherent because when the light is non-uniform the sequencer tends to attenuate some of the light.

Considering claim 4, a color sequencing system as defined in claim 1, wherein the spectral transmittance of the broadly-transmissive segment is attenuated in some portion of the wavelength spectrum of visible light;

See rejection of claim 1(c).

Considering claim 5, a color sequencing system as defined in claim 1, wherein the spectral transmittance of the broadly-transmissive segment is notched in some portion of the wavelength spectrum of visible light.

See rejection of claim 1.

Considering claim 6, a color sequencing system as defined in claim 1, wherein the three segments transmit light that is primarily red, green, and blue, respectively, is met by the four segments which transmit light that is red, green (shortwave and longwave) and blue. (see Table 1)

Regarding claim 21, see rejection of claim 1;

Response to Arguments

3. Applicant's arguments filed 10/29/04 regarding claims 1-6 have been fully considered but they are not persuasive. Applicant argues that "The blue segment is only defined at its upper end, as it is **implied** that it is transmissive from that upper end down to the lower end of the visible spectrum. The red segment is only defined at its lower end, as it is **implied** that it is transmissive from that lower end up to the upper end of the visible spectrum... Pettitt discloses only segments that are transmissive across a single

color band or segments that are uniformly transmissive across the entire visible spectrum (i.e. white segments).

Examiner submits that nowhere does Pettit disclose the fourth segment or the white segment should be uniform across the visible light spectrum. In other words, the reference of Pettit does not preclude the white filter or segment having a transmittance which is non-uniform across the spectrum. In fact, Pettit discloses on col. 6, lines 16-24 "Therefore a method of optimizing the fabrication of a color wheel is needed that will closely control the overall white efficiency variance of the completed color wheels without degrading the display system's color purity or substantially increasing the cost of the color wheel. The same need arises when matching color sources, whether light sources, color filters, or beam splitters, that exhibit unit-to-unit variances."

Allowable Subject Matter

4. Claims **7-17** and **20** are allowable over the cited prior art.
5. Claims **18,19** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: the prior fails to disclose, a method of creating field sequential color images comprising: providing a light source, a color sequencer, and a spatial light modulator, providing light of primarily one color band during a one time period from the combination

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of the light source and the color sequencer while the spatial light modulator displays an image corresponding to that color band, providing light of primarily a second color band during a second time period from the combination of the light source and the color sequencer while the spatial light modulator displays an image corresponding to that second color band, providing light of primarily a third color band during a third time period from the combination of the light source and the color sequencer while the spatial light modulator displays an image corresponding to that third color band; providing spectrally-broad light during a fourth time period from the combination of the light source and the color sequencer while the spatial light modulator displays an image corresponding to that spectrally-broad light, wherein while providing the spectrally-broad light the color sequencer has a transmittance that is not uniform across its wavelength band, wherein the spectrally-broad light includes simultaneous and substantial amounts of red, green, and blue light, wherein the spectrally-broad light has desired spectral characteristics as a result of the combination of the light source and the color sequencer, as in claim 7.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 10:00am - 6:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571)272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
April 7, 2005



PAULOS M. NATNAEL
PATENT EXAMINER